

REMARKS

Reconsideration and reexamination of the subject application are respectfully requested in light of the foregoing amendments and following remarks. Amendments are made without disclaimer or prejudice to pursuing any canceled subject matter in a continuing application.

1. Status of the Claims

Claims 1-17 currently are pending and stand rejected.

2. Support for the Amendments

The amendments to claims 1, 6, 10, 14, and 16 (detection limit of about 2 ng) are supported at Example 1 of the specification, for example.

The amendment of claims 6 and 14 is supported throughout the specification, e.g., Specification, page 7, lines 20-21 ("The method employs a dye reagent that is rapidly removed from most protein-binding membranes. . . ."); page 11, lines 17-23 and page 14, line 18 *et seq.* (destaining); page 15, line 30, *et seq.* (reversing staining); page 19, lines 18-22 (example).

3. Rejection under 35 U.S.C. § 102(a)

Claims 6, 7, 14, and 15 are rejected under 35 U.S.C. § 102(a) as allegedly anticipated by Bayramoğlu *et al.*, *Chem. Eng. Sci.* 57: 2323-34 (July 2002) ("Bayramoğlu"). Applicants traverse the rejection as it applies to the amended claims.

Bayramoğlu teaches, "Procion Brown MX-5BR was *covalently attached* onto IPNs membrane as a metal chelating reagent." Bayramoğlu, Abstract (emphasis added); *see also* page 2324, heading 2.3, "Procion Brown MX 5BR attachment onto IPNs membrane." In the present claims, the protein-binding membrane is capable of being destained. The specification defines "destain" as follows:

The term 'destain' or 'destaining' means removing a stain such as a compound of formula I from the matrix of a protein-binding membrane while leaving the dye bound to the protein substrate thereon.

By contrast, in Bayramoğlu, the stain cannot be removed from the matrix because it is covalently attached to the protein-binding membrane. That is, the protein-binding membrane is *incapable* of being destained. The cited art thus does not teach each and every element of the claimed invention, and the rejection accordingly should be withdrawn.

4. Rejection under 35 U.S.C. § 103(a)

Claims 1-17 are rejected under 35 U.S.C. § 103 as allegedly obvious over U.S. Patent No. 6,174,729 ("Alam") in view of Hopwood *et al.*, *Histochem. J.* 5: 391-403 (1973) ("Hopwood") and Miyagi, *Seibutsu Butsuri Kagaku* 19: 129-37 (1975) (Abstract) ("Miyagi"). Applicants traverse the rejection.

The Examiner discounts the superior results obtained by the methods, compounds, and kits. The Examiner alleges that Applicants must recite the inherent properties of the presently claimed subject matter in the claims. To the contrary, inherent properties need not be claimed to be relevant to patentability. *See In re Papesch*, 315 F.2d 381, 391 (C.C.P.A. 1963) ("From the standpoint of patent law, a compound and all of its properties are inseparable; they are one and the same thing There is no basis in law for ignoring any property in making such a comparison."). Nevertheless, to expedite prosecution, Applicants recite the recited method, compound, and kit have the capability to detect as few as about 2 ng of protein.

The Examiner discounts the lack of structural similarity between Procion blue M-RS and Reactive Brown 10. The Examiner alleges that all monochloro- or dichloro-triazine ring compounds have a common structure; hence, the artisan would have recognized that Procion dyes are interchangeable. The Examiner implies that the artisan of ordinary skill would not expect the structural dissimilarities between monochloro- or dichloro-triazine ring compounds to result in different properties.

In the present case, patentability is supported by the unexpectedly superior results obtained with the presently claimed method, compound, and kit. (The Office has not established a case of *prima facie* obviousness, for the reasons set forth in Applicants' previous response, incorporated herein by reference.) Miyagi states that Procion Blue M-RS, Amido Black 10B, and Ponceau 3R have a detection limit of 500 ng and that Coomassie Brilliant Blue G-250 and

Coomassie Brilliant Blue R-250 have a detection limit of 100 ng. The specification compares the detection limit of Reactive Brown 10 with Amido Black 10B, Ponceau S, and Coomassie Blue R-250. *See, e.g.,* Specification, Example 1. For PVDF and nitrocellulose membranes, the specification discloses a detection limit for Amido Black 10B, Ponceau S, and Coomassie Blue R-250 similar to that obtained by Miyagi using filter paper or cellulose acetate membranes: 50 ng, 100 ng, and 50 ng, respectively. *See* Specification, Tables 1 and 2. From this evidence, it is apparent that Miyagi's method of detection is comparable, although apparently 5-10 times less sensitive, to that used in the present specification. By contrast, Reactive Brown has a detection limit of 2 ng. *See* Specification, Tables 1 and 2. These data are summarized below:

Compound tested	Detection limit in Miyagi (ng)	Detection limit in Tables 1 and 2 (ng)
Amido Black 10B	500	50
Ponceau S or 3R	500	100
Coomassie Blue	100	50
Procion Blue M-RS	500	N.D.
Reactive Brown 10	N.D.	2

From the evidence on the record, the detection limit using Reactive Brown 10 is 250-fold lower than achieved with Procion Blue M-RS. Even compensating for the increased sensitivity in the assay disclosed in the specification, the detection limit using Reactive Brown 10 is at least 25-fold lower than achieved with Procion Blue M-RS. Notably, Reactive Brown 10 is significantly more sensitive than Coomassie Blue.

The evidence on the record does not suggest that the detection limit using Reactive Brown would be so low, or particularly less than Coomassie Blue. In fact, if the Examiner's allegations were true, the artisan would expect the various Procion dyes to display the same properties, in view of their common monochloro- or dichloro-triazine ring moieties. From Miyagi, the artisan would expect Procion dyes to be about *5-fold less sensitive* than Coomassie Blue, based on Miyagi's comparison of the detection limit using Procion Blue M-RS (500 ng) and Coomassie Blue (100 ng). Instead, the specification demonstrates that Reactive Brown 10 is *25-fold more sensitive* than Coomassie Blue (detection limit of 2 ng versus 50 ng). Neither

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Alam nor Hopwood discuss the relative sensitivity of Procion dyes. Accordingly, the increased sensitivity of Reactive Brown 10 relative to Coomassie Blue is unexpected.

Given the unexpectedly superior results obtained using Reactive Brown 10, the presently claimed method, compound, and kit are patentable over the combination of Alam, Miyagi, and Hopwood, even if a *prima facie* case of obvious were made. The rejection accordingly should be withdrawn.

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CONCLUSION

Should the Examiner have any questions or comments regarding Applicants' response, he is asked to contact Applicants' undersigned representative. Please direct all correspondence to the below-listed address.

In the event that the Office believes that there are fees outstanding in the above-referenced matter and for purposes of maintaining pendency of the application, the Office is authorized to charge the outstanding fees to Deposit Account No. 50-0573. The Office is likewise authorized to credit any overpayment to the same Deposit Account Number.

Respectfully submitted,

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